



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,206	03/19/2004	Tomoya Sanuki	016907-1634	6536
22428	7590	12/30/2004	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			VU, HUNG K	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,206	SANUKI, TOMOYA	
	Examiner	Art Unit	
	Hung Vu	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-11, 14, 16 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 13, 15 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/19/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Invention of Embodiment of Figures 5 and 6, Claims 12-19 in the reply filed on 10/06/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant's election without traverse of Invention of Embodiment of Figures 5 and 6, Claims 12-19 in the reply filed on 10/06/04 is acknowledged.

Claims 14 and 16 which are not belong to the elected Embodiment, and claims 1-11 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/06/04.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-13 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsumoto et al. (PN 6,794,717).

Matsumoto et al. discloses, as shown in Figure 1-57, a semiconductor device comprising:

- a semiconductor substrate (11);

- a first element region formed in the semiconductor substrate, a gate electrode (7) being provided on the first element region, source and drain regions (51,61) being formed in the first element region;

- an element isolation region (31) provided around the first element region;

- recesses formed in opposing sides of the first element region, the element isolation region being formed in the recesses.

With regard to claim 13, Matsumoto et al. discloses the opposing sides of the first element region oppose each other in a direction of a channel length [Figures 2, 3, 9, 10, 13-16].

With regard to claim 17, Matsumoto et al. discloses the element isolation region is formed of a material (TEOS which is also SiO_2) having a lower thermal expansion coefficient than a material (Si) of the first element region.

With regard to claim 18, Matsumoto et al. discloses the first element region is formed of Si, and the element isolation region is formed of TEOS (which is also SiO_2).

With regard to claim 19, Matsumoto et al. discloses the semiconductor device is a N-type semiconductor device.

3. Claims 12-13, 15 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (PN 5,663,588).

Suzuki et al. discloses, as shown in Figures 1A, 1B, 8A and 8B, a semiconductor device comprising:

- a semiconductor substrate (13);

- a first element region (13a) formed in the semiconductor substrate, a gate electrode (18) being provided on the first element region, source and drain regions (13c, 13d) being formed in the first element region;

- an element isolation region (16) provided around the first element region;

- recesses (19) formed in opposing sides of the first element region, the element isolation region being formed in the recesses.

With regard to claim 13, Suzuki et al. discloses the opposing sides of the first element region oppose each other in a direction of a channel length [Figures 1A, 8A].

With regard to claim 15, Suzuki et al. discloses a length of the recesses in a direction of a channel width is longer than a distance between the first element region (13a at the middle of Figures 1A, 8A) and a second element region (13a at the right side of Figures 1A, 8A) provided separate from the first element region in the direction of the channel width.

With regard to claim 17, Suzuki et al. discloses the element isolation region is formed of a material (SiO_2). It is inherent that SiO_2 has a lower thermal expansion coefficient than a material (Si) of the first element region.

With regard to claim 18, Suzuki et al. discloses the first element region is formed of Si, and the element isolation region is formed of SiO_2 .

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (PN 5,663,588) in view of Matsumoto et al. (PN 6,794,717).

Suzuki et al. discloses claimed invention including the semiconductor device, as recited in the rejection above. Suzuki et al. does not disclose the semiconductor device is a N-type semiconductor device. However, Matsumoto et al. discloses a semiconductor device is a N-type or P-type. Note Figure 1-57 of Matsumoto et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the semiconductor device of Suzuki et al. as a N-type semiconductor device, such as taught by Matsumoto et al. in order to perform the desired function.

Conclusion

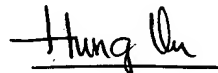
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

December 21, 2004

A handwritten signature in black ink, appearing to read "Hung Vu", is written over a horizontal line.

Hung Vu

Patent Examiner